Appln. No.: 10/018,607

Amendment Dated March 19, 2007

Reply to Office Action of October 17, 2006

<u>Amendments to the Claims:</u> This listing of claims will replace all prior versions, and listings, of claims in the application

Listing of Claims:

- 1. 52. (Canceled)
- 53. (New) A gas diffusion electrode comprising:
  - (i) an electrically conducting porous structure;
  - (ii) a first catalytic component, said first catalytic component being embedded with the porous structure and being a gas-phase catalyst designed to remove contaminant gases, wherein said first catalytic component comprises a first catalyst which is one or more noble metals or non-noble metals of a combination thereof, and wherein said first catalyst is directly supported on an electrically non-conducting support; and
  - (iii) a second catalytic component, said second catalytic component being applied to the porous structure as a surface layer and being an electrocatalyst adapted to facilitate an electrochemical reaction, wherein said second catalytic component comprises a second catalyst which is a precious metal or a transition metal as the metal or metal oxide, either unsupported or supported in a dispersed form on a carbon support; a carbon or an organic complex, in the form of a high surface area finely divided powder or fibre, or a combination thereof.
- 54. (New) A gas diffusion electrode according to claim 53, wherein the first catalyst is selected from the group consisting of platinum, palladium, ruthenium, rhodium, gold, chromium, molybdenum, nickel and manganese or a combination thereof.
- 55. (New) A gas diffusion electrode according to claim 53, wherein the electrically non-conducting support is an oxidic support.
- 56. (New) A gas diffusion electrode according to claim 53, wherein the electrically non-conducting support is selected from the group consisting of alumina, silica, ceria, zirconia, an oxide of iron, a manganese oxide and titania.

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57. (New) A gas diffusion electrode according to claim 53, wherein the second catalytic component is a platinum/ruthenium alloy supported on carbon black or platinum supported on carbon black.

- 58. (New) A gas diffusion electrode according to claim 53, wherein the porous structure is a woven or non-woven fibrous material.
- 59. (New) A gas diffusion electrode according to claim 53, wherein the porous structure is a woven or non-woven fibrous material and further comprises a filler material.
- 60. (New) A gas diffusion electrode according to claim 53, wherein the porous structure is formed from a polymer.
- 61. (New) A gas diffusion electrode according to claim 53, wherein the porous structure is a metal mesh.
- 62. (New) A membrane electrode assembly comprising a gas diffusion electrode as claimed in claim 53, a second gas diffusion electrode, and a solid polymer membrane.
- 63. (New) A membrane electrode assembly comprising a gas diffusion electrode as claimed in claim 53, a gas diffusion substrate and a solid polymer membrane, wherein an electrocatalyst layer is applied to the side of the membrane facing the gas diffusion substrate.
- 64. (New) A fuel cell comprising a gas diffusion electrode as claimed in claim 1.
- 65. (New) A fuel cell comprising a membrane electrode assembly as claimed in claim 62.
- 66. (New) A fuel cell comprising a membrane electrode assembly as claimed in claim 63.
- 67. (New) A gas diffusion electrode comprising:
  - (i) an electrically conducting porous structure;
  - (ii) first catalytic component, said first catalytic component being applied to the porous structure as a surface layer and being a gas-phase catalyst designed to remove contaminant gases, wherein said first catalytic component comprises a first catalyst

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which is one or more noble metals or non-noble metals of a combination thereof, and wherein said first catalyst is directly supported on an electrically non-conducting support; and

- (iii) a second catalytic component, said second catalytic component being applied as a separate surface layer or as a surface layer mixed with the first catalytic component and being an electrocatalyst adapted to facilitate an electrochemical reaction, wherein said second catalytic component is a precious metal or a transition metal as the metal or metal oxide, either unsupported or supported in a dispersed form on a carbon support; a carbon or an organic complex, in the form of a high surface area finely divided powder or fibre, or a combination thereof.
- 68. (New) A gas diffusion electrode according to claim 67, wherein the first catalyst is selected from the group consisting of platinum, palladium, ruthenium, rhodium, gold, chromium, molybdenum, nickel and manganese or a combination thereof.
- 69. (New) A gas diffusion electrode according to claim 67, wherein the electrically nonconducting support is an oxidic support.
- 70. (New) A gas diffusion electrode according to claim 67, wherein the electrically non-conducting support is selected from the group consisting of alumina, silica, ceria, zirconia, an oxide of iron, a manganese oxide and titania.
- 71. (New) A gas diffusion electrode according to claim 67, wherein the second catalytic component is a platinum/ruthenium alloy supported on carbon black or platinum supported on carbon black.
- 72. (New) A gas diffusion electrode according to claim 67, wherein the porous structure is a woven or non-woven fibrous material.
- 73. (New) A gas diffusion electrode according to claim 67, wherein the porous structure is a woven or non-woven fibrous material and further comprises a filler material.
- 74. (New) A gas diffusion electrode according to claim 67, wherein the porous structure is formed from a polymer.

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- 75. (New) A gas diffusion electrode according to claim 67, wherein the porous structure is a metal mesh.
- 76. (New) A membrane electrode assembly comprising a gas diffusion electrode as claimed in claim 67, a second gas diffusion electrode, and a solid polymer membrane.
- 77. (New) A membrane electrode assembly comprising a gas diffusion electrode as claimed in claim 67, a gas diffusion substrate and a solid polymer membrane, wherein an electrocatalyst layer is applied to the side of the membrane facing the gas diffusion substrate.
- 78. (New) A fuel cell comprising a gas diffusion electrode as claimed in claim 67.
- 79. (New) A fuel cell comprising a membrane electrode assembly as claimed in claim 76.
- 80. (New) A fuel cell comprising a membrane electrode assembly as claimed in claim 77.